

1 “(1) to conduct a study on the state of practice
2 and research needs for precipitation estimation, in-
3 cluding probable maximum precipitation estimation;
4 and

5 “(2) to submit, not later than 24 months after
6 the date on which such agreement is finalized, to the
7 Committee on Science, Space, and Technology of the
8 House of Representatives and the Committee on
9 Commerce, Science, and Transportation of the Sen-
10 ate, and make publicly available on a website, a re-
11 port on the results of the study under paragraph
12 (1).

13 “(b) STUDY.—The report under subsection (a) shall
14 include the following:

15 “(1) An examination of the current state of
16 practice for precipitation estimation at scales appro-
17 priate for decisionmaker needs, and rationale for
18 further evolution of this field.

19 “(2) An evaluation of best practices for precipi-
20 tation estimation that are based on the best-avail-
21 able science, include assumptions of non-stationarity,
22 and can be utilized by the user community.

23 “(3) A framework for—

1 “(A) the development of a National Guid-
2 ance Document for estimating extreme precipi-
3 tation in future conditions; and

4 “(B) evaluation of the strengths and chal-
5 lenges of the full spectrum of approaches, in-
6 cluding for probable maximum precipitation
7 studies.

8 “(4) A description of existing research needs in
9 the field of precipitation estimation in order to mod-
10 ernize current methodologies and incorporate as-
11 sumptions of non-stationarity.

12 “(5) A description of in-situ, airborne, and
13 space-based observation requirements, that could en-
14 hance precipitation estimation and development of
15 models, including an examination of the use of geo-
16 graphic information systems and geospatial tech-
17 nology for integration, analysis, and visualization of
18 precipitation data.

19 “(6) A recommended plan for a Federal re-
20 search and development program, including speci-
21 fications for costs, timeframes, and responsible agen-
22 cies for addressing identified research needs.

23 “(7) An analysis of the respective roles in pre-
24 cipitation estimation of various Federal agencies,

1 each update includes at least one precipitation fre-
2 quency atlas that incorporates assumptions of non-
3 stationarity;

4 “(2) develop products targeted at users of this
5 data in support of the mission of the National Oce-
6 anic and Atmospheric Administration;

7 “(3) make publicly available, in a searchable,
8 interoperable format, all precipitation frequency esti-
9 mate studies developed by the National Oceanic and
10 Atmospheric Administration that the Administrator
11 has the legal right to redistribute and that are
12 deemed to be at an appropriate stage of development
13 on an internet website of the National Oceanic and
14 Atmospheric Administration; and

15 “(4) ensure all precipitation frequency estimate
16 data, products, and supporting documentation and
17 metadata are preserved, curated, and served by the
18 National Oceanic and Atmospheric Administration,
19 as appropriate.

20 “(b) AUTHORIZATION OF APPROPRIATIONS.—There
21 are authorized to be appropriated to the National Oceanic
22 and Atmospheric Administration to carry out this section
23 \$3,500,000 for each of fiscal years 2022 through 2030.

1 **“SEC. 603. IMPROVING PROBABLE MAXIMUM PRECIPITA-**
2 **TION ESTIMATES.**

3 “(a) IN GENERAL.—Not later than 90 days after the
4 date on which the National Academies makes public the
5 report under section 601, the Administrator, in consider-
6 ation of the report recommendations, shall consult with
7 relevant partners, including users of the data, on the de-
8 velopment of a plan to—

9 “(1) not later than 6 years after the completion
10 of the National Academies report under section 601
11 and not less than every 10 years thereafter, update
12 probable maximum precipitation estimates for the
13 United States, such that each update includes esti-
14 mates that incorporate assumptions of non-
15 stationarity;

16 “(2) coordinate with partners to conduct re-
17 search in the field of extreme precipitation esti-
18 mation, in accordance with the research needs iden-
19 tified by the National Academies report under sec-
20 tion 601;

21 “(3) make publicly available, in a searchable,
22 interoperable format, all probable maximum precipi-
23 tation studies developed by the National Oceanic and
24 Atmospheric Administration that the Administrator
25 has the legal right to redistribute and deemed to be
26 at an appropriate state of development on an inter-

1 net website of the National Oceanic and Atmos-
2 pheric Administration; and

3 “(4) ensure all probable maximum precipitation
4 estimate data, products, and supporting documenta-
5 tion and metadata developed by the National Oee-
6 anic and Atmospheric Administration are preserved,
7 curated, and served by the National Oceanic and At-
8 mospheric Administration, as appropriate.

9 “(b) NATIONAL GUIDANCE DOCUMENT FOR THE DE-
10 VELOPMENT OF PROBABLE MAXIMUM PRECIPITATION
11 ESTIMATES.—The Administrator, in collaboration with
12 Federal agencies, State, territorial, tribal and local gov-
13 ernments, academia and other partners the Administrator
14 deems appropriate, shall develop a National Guidance
15 Document that—

16 “(1) provides best practices that can be fol-
17 lowed by Federal and State regulatory agencies, pri-
18 vate meteorological consultants, and other users that
19 perform probable maximum precipitation studies;

20 “(2) considers the recommendations provided in
21 the National Academies study in section 601;

22 “(3) facilitates review of probable maximum
23 precipitation studies by regulatory agencies;

1 “(4) provides confidence in regional and site-
2 specific probable maximum precipitation estimates;
3 and

4 “(5) includes such other topics as the Adminis-
5 trator deems appropriate.

6 “(c) PUBLICATION.—Not later than 2 years after the
7 date on which the National Academies makes public the
8 report under section 601, the Administrator shall make
9 publicly available the National Guidance Document under
10 subsection (b) on an internet website of the National Oce-
11 anic and Atmospheric Administration.

12 “(d) UPDATES.—The Administrator shall update the
13 National Guidance Document not less than once every 10
14 years after the publication of the National Guidance Docu-
15 ment under subsection (c) and publish such updates in
16 accordance with such subsection.

17 “(e) AUTHORIZATION OF APPROPRIATIONS.—There
18 are authorized to be appropriated to the National Oceanic
19 and Atmospheric Administration to carry out this section:

20 “(1) \$13,000,000 for fiscal year 2022.

21 “(2) \$14,000,000 for fiscal year 2023.

22 “(3) \$14,000,000 for fiscal year 2024.

23 “(4) \$2,000,000 for fiscal year 2025.

24 “(5) \$2,000,000 for fiscal year 2026.

25 “(6) \$2,000,000 for fiscal year 2027.

1 **“SEC. 604. DEFINITIONS.**

2 “ In this title:

3 “(1) ADMINISTRATOR.—The term ‘Adminis-
4 trator’ means the Under Secretary of Commerce for
5 Oceans and Atmosphere and Administrator of the
6 National Oceanic and Atmospheric Administration.

7 “(2) NATIONAL ACADEMIES.—The term ‘Na-
8 tional Academies’ means the National Academies of
9 Sciences, Engineering, and Medicine.

10 “(3) PRECIPITATION FREQUENCY ATLAS.—The
11 term ‘precipitation frequency atlas’ means a geo-
12 graphical atlas, such as the NOAA Atlas 14, that
13 contains precipitation frequency estimates for the
14 United States with associated lower and upper
15 bounds of a determined confidence interval and sup-
16plementary information on temporal distribution of
17 heavy precipitation, analysis of seasonality, and
18 trends in annual maximum series data.

19 “(4) PRECIPITATION FREQUENCY ESTIMATE.—
20 The term ‘precipitation frequency estimate’ means
21 the magnitude associated with specific average re-
22currence interval or annual exceedance probability
23 for a given duration.

24 “(5) UNITED STATES.—The term ‘United
25 States’ means, collectively, each State of the United
26 States, the District of Columbia, the Commonwealth

1 of Puerto Rico, American Samoa, Guam, the Com-
2 monwealth of the Northern Mariana Islands, the
3 Virgin Islands of the United States, and any other
4 territory or possession of the United States.”.

5 (b) CONFORMING AMENDMENT.—Section 1(b) of the
6 Weather Research and Forecasting Innovation Act of
7 2017 (15 U.S.C. 8501 note) is amended in the table of
8 contents by adding at the end the following:

“TITLE VI—IMPROVING FEDERAL PRECIPITATION INFORMATION

“Sec. 601. Study on Precipitation Estimation.

“Sec. 602. Improving Precipitation Frequency Estimates.

“Sec. 603. Improving Probable Maximum Precipitation Estimates.

“Sec. 604. Definitions.”.

